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10CFR50.73

GNRO-2019/00033

August 7, 2019

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Supplemental Licensee Event Report 2018-009-01,
Reactor Manual Shutdown Due to Feedwater Level Control Changes
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

Dear Sir or Madam:

Attached is Supplemental Licensee Event Report 2018-009-01 Reactor Manual Shutdown Due to Feedwater Level Control Changes. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event or condition that resulted in an unplanned manual actuation of the reactor protection system.

This letter contains no new commitments. If you have any questions or require additional information, please contact Jim Shaw at 601-437-2103.

Sincerely,

A handwritten signature in black ink, appearing to read "E. Larson", with a long horizontal flourish extending to the right.

Eric A. Larson
EAL/rtw

Attachment: Licensee Event Report 2018-009-01

cc: see next page

NRC Region IV - Regional Administrator
NRC Senior Resident Inspector, Grand Gulf Nuclear Station
NRR Project Manager

Attachment

Supplemental Licensee Event Report 2018-009-01



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. Facility Name Grand Gulf Nuclear Station, Unit 1	2. Docket Number 05000416	3. Page 1 OF 3
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4. Title
Reactor Manual Shutdown Due to Feedwater Level Control Changes

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
09	14	2018	2018	009	01	08	07	2019	N/A	05000 N/A
									Facility Name	Docket Number
									N/A	05000 N/A

9. Operating Mode MODE 1	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)			
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
10. Power Level 100%	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(iii)
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)	

12. Licensee Contact for this LER

Licensee Contact

Jim Shaw, Manager, Regulatory Assurance

Telephone Number (Include Area Code)

(601) 437-2103

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable To ICES	Cause	System	Component	Manufacturer	Reportable To ICES
D	N23	1N23R053	Bailey	Yes	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected

☐ Yes (If yes, complete 15. Expected Submission Date) ☒ No

15. Expected Submission Date

Month	Day	Year
N/A	N/A	N/A

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On September 14, 2018, Grand Gulf Nuclear Station (GGNS) was operating in Mode 1 at 100 percent power and performing a backfill of a 6A feedwater heater level transmitter. At 1638 hours technicians began backfilling operations of the transmitter. During the activity, GGNS experienced the 6A feedwater heater drain valve going full open and subsequent heater drain tank level control valve oscillations, which resulted in automatic condensate booster pump and feedwater pump trips on low suction pressure. The feedwater pump trip was followed by a reactor recirculation flow control valve runback. At 1644 hours operators performed a manual reactor protection system shut down of the reactor to place the unit in Mode 3. Upon reactor shutdown all systems performed as designed and no subsequent safety system actuations occurred. The root cause of the event was that test instructions did not include dynamic tuning of Air Operated Valves. The cause of the manual shutdown was operator response in anticipation of reactor water level lowering to the 11.4 inch automatic scram setpoint. Corrective actions included adjustments to the heater drain tank level control circuit. There were no consequences to the general safety of the public, nuclear safety, industrial safety or radiological safety for this event.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Grand Gulf Nuclear Station, Unit 1	05000-416	2018	- 009	- 01

NARRATIVE**A. PLANT CONDITIONS PRIOR TO THE EVENT**

Grand Gulf Nuclear Station (GGNS) Unit 1 was operating at approximately 100 percent power in Mode 1. The 6A feedwater heater level dump valve was in manual control. The 6A feedwater heater drain valve was in automatic control.

B. DESCRIPTION

At 1638 hours CDT on September 14, 2018, while the plant was operating at approximately 100 percent reactor power, maintenance technicians were performing a backfill of the 6A feedwater [SJ] heater level transmitter 1N23N059A [JB]. The transmitter was taken out of service in the control logic, but it continued to provide backup input to the drain valve controller.

When the backfill procedure was performed, the control system swapped controlling level transmitters from normal to backup. This caused the 6A feedwater heater drain valve to open resulting in increased flow to the heater drain tank. This system transient, coupled with inadequate tuning of the heater drain tank level controller, resulted in oscillations of the heater drain tank level control valves.

The above condition resulted in increased demand on the condensate system and eventually in low suction pressure for the condensate booster and reactor feedwater pumps. One condensate booster pump automatically tripped on low suction pressure followed by a trip of one reactor feedwater pump on low suction pressure.

The feed pump trip initiated a reactor recirculation [AD] flow control valve runback signal. At 1644 hours on September 14, 2018, operators performed a manual reactor protection system shutdown of the reactor. Upon reactor shutdown all systems performed as designed and no subsequent safety system actuations occurred.

C. REPORTABILITY

This report is made pursuant to 10CFR50.73(a)(2)(iv)(A) for any event or condition that resulted in a manual or automatic actuation of the reactor protection system as listed in 10CFR50.73(a)(2)(iv)(B).

This event was reported under 10CFR50.72(b)(2)(iv)(B) for any event that results in the actuation of the reactor protection system while the reactor is critical in ENS notification 53608.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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Grand Gulf Nuclear Station, Unit 1	05000-416	2018	- 009	- 01
<p>NARRATIVE</p> <p>D. CAUSE</p> <p>The cause of the manual shutdown was operator response in anticipation of reactor water level lowering to the reactor vessel water level 11.4 inch scram setpoint, caused by a reduction in feedwater system flow to the reactor vessel.</p> <p>The root cause of the event was that test instructions did not include dynamic tuning of Air Operated Valves. As a result, the heater drain tank level control system circuits were not adequately tuned to control level during system perturbations.</p> <p>E. CORRECTIVE ACTIONS</p> <p>The following corrective actions have been completed:</p> <ul style="list-style-type: none">• Control circuits for the heater drain tank level control system have been adjusted.• The guidance in EN-DC-117, Post Modification Testing and Special Instructions, has been revised to direct that tuning is required when modifications impact control function such as: air operated valves, positioners, valve actuators, valve controllers, and other control loop components. <p>F. SAFETY SIGNIFICANCE</p> <p>The safety significance of this event is determined to be low. The manual scram was performed in accordance with plant procedures. There were no actual nuclear safety consequences or radiological consequences during the event.</p> <p>G. PREVIOUS SIMILAR EVENTS</p> <p>Entergy conducted a three-year review of the relevant licensee event reports and determined that there was one similar known event reported as GGNS Licensee Event Report 2018-01-00 Reactor Manual Shutdown due to Turbine Pressure Control Valve Position Changes. The failure in that event was an incorrect setting in one element of a three element turbine control anti-resonance circuit, which is different from this event which was a control circuit tuning issue. Therefore, the corrective actions for the previous event would not have prevented this event.</p>				